

8.2 Number of Shipments

8.2 (3255)

Comment - EIS000981 / 0003

What quantities of nuclear waste will be shipped via highway and on rail shipments? What is the quantity per shipment? What do the vehicles look like (trailer and rail) and what safety precautions will be taken to the transportation vehicles?

Response

See Table J-1 of the EIS for estimated numbers of shipments for the various inventory and national transportation analysis combinations. In response to public comments, DOE has included the maps of the representative highway routes and rail lines for the 45 states it used for analysis in the EIS (see Section J.4). Section J.4 includes potential health and safety impacts associated with shipments for each state through which shipments could pass. For the Proposed Action, the estimated number of truck shipments under the mostly legal-weight scenario would be 52,786 (with an additional 300 rail shipments) and under the mostly rail scenario there would be an estimated 9,646 rail shipments plus an additional 1,079 legal-weight truck shipments. DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada.

Truck shipments could be made using a cask that holds four spent nuclear fuel assemblies that would weigh about 2.7 metric tons (3 tons). The truck cask itself would weigh about 24 metric tons (26 tons). Rail shipments would be made using a cask that holds about 26 spent nuclear fuel assemblies that would weigh about 18 metric tons (20 tons). The rail cask itself would weigh about 140 metric tons (150 tons). Figures J-3 and J-4 of the EIS show these casks on a trailer and a railcar.

Many safety precautions are taken during the transport of spent nuclear fuel and include U.S. Department of Transportation and Nuclear Regulatory Commission requirements for driver training, packaging, placarding of vehicles, escorting, communications, security, and routing. Because of the public's interest in transportation in general, the Department has included Appendix M in the EIS. Appendix M provides background information about transportation-related topics, such as transportation operations, cask testing requirements, and emergency response.

8.2 (4408)

Comment - EIS001511 / 0001

The Department continues to respond to inquiries from reporters prompted by repository opponents fanning the public's fears of transportation disasters around the country. This is of course exacerbated by the state of Nevada's press releases pointing out that according to the DEIS nearly all spent fuel shipments from across the country will pass through Illinois in route to Yucca Mountain. If the proposed repository is established, the number of spent nuclear fuel shipments passing through Illinois undoubtedly will increase. However, the fiction fostered by the estimates of the frequency which these shipments will transit Illinois as presented in the DEIS needs to be corrected. While Illinois' extensive experience and expertise gained from its unique program for inspecting and escorting spent fuel shipments will make the transition to heavier shipment volume manageable, no constructive purpose is served by distorting the expected shipment load at this time.

Response

In response to public comments, DOE has included the maps of the representative highway routes and rail lines for the 45 states it used for analysis in the EIS (see Figure J-42 of the EIS for the representative Illinois routes analyzed). It also included potential health and safety impacts associated with shipments for each state through which shipments could pass. Table J-82 lists the estimated number of legal-weight truck shipments of spent nuclear fuel and high-level radioactive waste that would enter Nevada from Illinois in the mostly legal-weight truck scenario. The table also lists the estimated number of rail shipment through Illinois in the mostly rail scenario for each of the proposed Nevada rail corridors and heavy-haul truck routes.

If the Yucca Mountain site was approved, under the mostly legal-weight truck scenario, the total number of truck shipments through Illinois was estimated to be 38,549 over 24 years, which is approximately 4 truck shipments per day. There would be no rail shipments.

The estimated numbers of shipments entering Nevada from Illinois under the mostly rail scenario are less than the mostly legal-weight truck scenario. According to Table J-82, the number of rail shipments would range from 6,825 to 7,027, depending on the mode (rail or heavy-haul truck) and corresponding corridor/route selected in Nevada. This is less than 1 rail shipment per day over 24 years. In addition, there would be approximately 1,071 legal-weight truck shipments through Illinois. DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada.

Should a decision to proceed with the development of a repository at Yucca Mountain be made, shipping routes would be identified at least 4 years before shipments began. At this time, many years before shipments could begin, it is impossible to predict accurately which highway routes or rail lines DOE could use. Before such shipments began, states and tribes could designate alternate preferred highway shipping routes, and highways and rail lines could be built or modified.

8.2 (7528)

Comment - EIS001723 / 0002

You've got to get the waste to the site from all over the country, Maine to Florida, California to Washington. Got to get here some way (passing through 43 states I'm told).

Right now, looks like your best plan is by truck. Rather impractical if you ask me. You are so vague about the use of rail, I don't know how heavily this aspect has been studied? You at least know, you will have to build some rail lines (one would go right through Pahrump, if you were to use the Jean Corridor). If this were the case, how many train loads of Nuclear Garbage would come through our town?

I don't know enough about trains to make a comment, but I'll bet it'll be more than one!

Response

In response to public comments, DOE has included maps of the representative highway routes and rail lines for the 45 states it used for analysis in the EIS (see Figure J-53 of the EIS for the representative Nevada routes analyzed). It also included potential health and safety impacts associated with shipments for each state through which shipments could pass. Table J-93 lists the estimated number of legal-weight truck shipments of spent nuclear fuel and high-level radioactive waste that would enter Nevada in the mostly legal-weight truck scenario. The table also lists the estimated number of rail shipments in Nevada in the mostly rail scenario for each of the proposed rail corridors and heavy-haul truck routes.

If the Yucca Mountain site was approved, under the mostly legal-weight truck scenario, the estimated total number of truck shipments in Nevada would be 52,786 over 24 years, approximately 6 truck shipments per day. In addition, there would be approximately 300 rail shipments over the 24-year period.

The estimated numbers of shipments in Nevada under the mostly rail scenario are less than the mostly legal-weight truck scenario. According to Table J-93, the number of rail shipments would be 9,646, no matter which mode (rail or heavy-haul truck) and corresponding corridor/route selected in Nevada. This is slightly more than 1 rail shipment per day over 24 years. In addition, there would be approximately 1,079 legal-weight truck shipments in Nevada. DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada.

Should a decision to proceed with the development of a repository at Yucca Mountain be made, shipping routes would be identified at least 4 years before shipments began. At this time, many years before shipments could begin, it is impossible to predict accurately which highway routes or rail lines DOE could use. Before such shipments began, states and tribes could designate alternate preferred highway shipping routes, and highways and rail lines could be built or modified.

8.2 (7530)

Comment - EIS001723 / 0003

All things being equal, let's say you decide the use of trucks are the best bet for transporting this garbage. What are we speaking of here? Let's speak only of what you refer to as "Light Haul" trucks. Most of us would recognize

these as what are commonly referred to as 18 wheelers. So, let's use them for our example. And let's use 40,000 lbs. Per load. I seem to remember this weight as being a "legal weight" in most states. We won't even speak of what you refer to as "Heavy Haul" trucks. That'll scare most folks right out of their skin!

OK, we've got 77,000 metric tons of garbage to move. Remember a metric ton is 2200 lbs., so we are to move 169,000,000 lbs. Of waste to Yucca Mountain. 40,000 lbs. Per load (bulk, not counting the weight of the canisters), does that come out to 4,840,000 truck loads? Even more, if you count the weight of the canisters!

Response

See Table J-1 of the EIS for estimated numbers of shipments for the various inventory and national transportation analysis combinations. In response to public comments, DOE has included maps of the representative highway routes and rail lines for the 45 states it used for analysis in the EIS (see Section J.4). Section J.4 includes potential health and safety impacts associated with shipments for each state through which shipments could pass. For the Proposed Action, the estimated number of truck shipments under the mostly legal-weight scenario would be 52,786 with 300 rail shipments, and under the mostly rail scenario there would be an estimated 9,646 rail shipments with 1,079 legal-weight truck shipments. A legal-weight truck is 36 metric tons (40 tons or 80,000 pounds), which includes the weight of the vehicle and the weight of the spent nuclear fuel and shipping casks.

DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada.

8.2 (9417)

Comment - EIS001888 / 0112

The DEIS did not describe the volumes of waste that may travel on each highway or rail route.

Response

In response to public comments, DOE has included maps of the representative highway routes and rail lines for the 45 states it used for analysis in the EIS (see Section J.4 of the EIS). Section J.4 includes potential health and safety impacts associated with shipments for each state through which shipments could pass.

Should a decision to proceed with the development of a repository at Yucca Mountain be made, shipping routes would be identified at least 4 years before shipments began. At this time, many years before shipments could begin, it is impossible to predict accurately which highway routes or rail lines DOE could use. Before such shipments began, states and tribes could designate alternate preferred highway shipping routes, and highways and rail lines could be built or modified.

The amount of spent nuclear fuel and high-level radioactive waste destined for the repository is discussed in Appendix A of the EIS.

8.2 (9540)

Comment - EIS001888 / 0201

[Summary of comments noted by Clark County Nuclear Waste Division staff at various citizens' meetings.]

Questions were asked about the number of potential shipments.

Response

See Table J-1 of the EIS for estimated numbers of shipments for the various inventory and national transportation analysis combinations. In response to public comments, DOE has included maps of the representative highway routes and rail lines for the 45 states it used for analysis in the EIS (see Section J.4). Section J.4 includes potential health and safety impacts associated with shipments for each state through which shipments could pass. For the Proposed Action, the estimated number of truck shipments under the mostly legal-weight scenario would be 52,786 with 300 rail shipments, and under the mostly rail scenario there would be an estimated 9,646 rail shipments plus 1,079 legal-weight truck shipments.

8.2 (10072)

Comment - EIS001888 / 0548

[Clark County summary of a comment it received from a member of the public.]

A commenter stated that the number of shipments used for the impacts analysis should be estimated based on single assembly casks, in order to provide an upper bound on the number of shipments.

Response

Single assembly casks are generally necessary for shipments of spent nuclear fuel that have very short decay times, about 150 days, or are used when a few spent nuclear fuel assemblies must be moved. It is highly unlikely that single assembly casks would be used for shipments to the repository because shipments to the repository involve a large number of spent nuclear fuel assemblies and these assemblies have decay times of 5 years or more. Therefore, the numbers of truck and rail shipments were based on current generation casks that have the ability to hold more than one spent nuclear fuel assembly.

See Table J-1 of the EIS for estimated numbers of shipments for the various inventory and national transportation analysis combinations. In response to public comments, DOE has included maps of the representative highway routes and rail lines for the 45 states it used for analysis in the EIS (see Section J.4).

8.2 (10888)

Comment - EIS000762 / 0004

Rail shipments to Yucca Mountain would also heavily impact Utah. Under the routing scenarios DOE used in the draft EIS, rail shipments of highly radioactive materials will traverse Utah on four rail lines:

- The Union Pacific from Grand Junction, Colorado, to Southern Nevada (461 miles in Utah);
- The Union Pacific from Granger, Wyoming to Southern Nevada (390 miles in Utah);
- The Union Pacific from Pocatello, Idaho to Southern Nevada (381 miles); and
- From Colorado, Idaho, or Wyoming to Wells, Nevada, via Ogden.

Under the mostly rail scenarios, between 10,600 and 18,400 rail shipments traverse Utah over 24 years, which is an average of 8 to 9 rail casks per week every week for decades. Additionally, even with most shipments coming by rail, Utah would also be impacted by an average of two truck shipments per week during the same time period. (See Table 2 for additional information on rail shipments.)

The information presented above is not found anywhere in the draft EIS.

Response

In response to public comments, DOE has included maps of the representative highway routes and rail lines for the 45 states it used for analysis in the EIS (see Figure J-52 of the EIS for the representative Utah routes). It also included potential health and safety impacts associated with shipments for each state through which shipments could pass. Table J-89 lists the estimated number of legal-weight truck shipments of spent nuclear fuel and high-level radioactive waste that would enter Nevada from Utah on Interstate-15 in the mostly legal-weight truck scenario. The table also lists the estimated number of rail shipment through Utah in the mostly rail scenario for each of the proposed Nevada rail corridors and heavy-haul truck routes.

If the Yucca Mountain site was approved, under the mostly legal-weight truck scenario, the estimated total number of truck shipments through Utah would be 45,919 over 24 years, approximately 5 truck shipment per day. In addition, there would be approximately 300 rail shipments over the 24-year period.

The estimated numbers of shipments entering Nevada from Utah under the mostly rail scenario are less than the mostly legal-weight truck scenario. According to Table J-92, the number of rail shipments would range from 8,181 to 9,134 depending on the mode (rail or heavy-haul truck) and corresponding corridor/route selected in Nevada. This is slightly more than 7 rail shipment per week over 24 years. In addition, there would be approximately 1,079 legal-weight truck shipments through Utah, which is slightly less than 1 per week. DOE has identified mostly rail as its preferred mode of transportation, both nationally and in Nevada. At this time, however, the Department has not identified a preference among the five candidate rail corridors in Nevada.

Should a decision to proceed with the development of a repository at Yucca Mountain be made, shipping routes would be identified at least 4 years before shipments began. At this time, many years before shipments could begin, it is impossible to predict accurately which highway routes or rail lines DOE could use. Before such shipments began, states and tribes could designate alternate preferred highway shipping routes, and highways and rail lines could be built or modified.

8.3 Transportation Modes and Routes

8.3 (60)

Comment - 27 comments summarized

Commenters expressed concern and opposition to routing shipments of spent nuclear fuel and high-level radioactive waste through heavily populated areas and along some of the busiest and most congested freeways and rail lines in the United States, stating little or no effort has been made to avoid densely populated areas, reduce unnecessary risks to persons and property, or provide for the equitable distribution of shipping routes among a much larger number of possible routes. Commenters stated that DOE should coordinate closely with state and local governments to minimize transportation routing through populated areas.

A commenter stated that although routes would be selected in accordance with 49 CFR 397.101, these paths [the Interstate Highway System] have the highest population density. The commenter stated that DOE should have to consider an alternative that maximized the avoidance of dense urban areas.

Response

In response to comments on the Draft EIS, DOE prepared Appendix M to provide additional information on transportation regulations and the operational aspects of spent nuclear fuel and high-level radioactive waste transportation (see Sections M.2 and M.3 of the EIS). This information includes more details on how DOE would select transportation routes if the Yucca Mountain site received approval. The routes selected would comply with the applicable regulations in place at the time of shipment.

If there was a decision to proceed with the development of a repository at Yucca Mountain shipping routes would be identified at least 4 years before shipments began and Section 180(c) assistance would be made available approximately 4 years prior to shipments through a jurisdiction. At this time, many years before shipments could begin, it is impossible to predict accurately which highway routes or rail lines DOE could use. Before such shipments began, states and tribes could designate alternate preferred highway shipping routes, and highways and rail lines could be built or modified.

Nevertheless, the representative highway routes identified for the EIS analysis conform to U.S. Department of Transportation regulations (49 CFR 397.101). These regulations, developed for transportation of Highway Route Controlled Quantities of Radioactive Materials, require such shipments to be on preferred routes selected to reduce the time in transit. A preferred route is an Interstate System highway, bypass, or beltway, or an alternate route designated by a state or tribal routing agency. Alternate routes could be designated by states and tribes under Department of Transportation regulations (49 CFR 397.103) that require consideration of the overall risk to the public and prior consultation with local jurisdictions and other states and tribes. Federal regulations do not restrict the routing of rail shipments. However, for the analysis, as discussed in Section J.1.1.3 of the EIS, DOE assumed routes for rail shipments that would provide expeditious travel and the minimum number of interchanges between railroads.

In response to public comments, DOE has included maps of the representative highway routes and rail lines it used for analysis in the EIS (see Section J.4). It also included potential health and safety impacts associated with shipments for each state through which shipments could pass.

DOE chose candidate rail corridors in Nevada to maximize the use of Federal lands (except U.S. Air Force-controlled lands), provide access to regional rail carriers, and minimize, to the extent possible, obvious land-use conflicts. As discussed in Section 6.3.2.1, all of the candidate Nevada branch rail lines would require the use of mostly Federal land and very little private land.